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2005

## Capital Democratization

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### Recommended Citation

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## CAPITAL DEMOCRATIZATION<sup>β</sup>

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### Abstract

Although principles underlying binary economics were first published in 1958 (Kelso and Adler), the many books and papers that discuss the subject, with the exception of Kane (2000) and Kurland (2001), do not utilize conventional economics language. To facilitate the teaching of binary economics in beginning and intermediate college courses in economics and business, the paper explains some major microeconomic and macroeconomic fundamentals of binary economics by utilizing conventional neo-classical economic models. It then compares the theoretical results reached in a non-binary economic environment to those that may be reached in a binary one. The most important result from the comparison is that, in a non-binary environment, the economy would employ less than full potential capital and thus generate less than optimum output, consumption, saving and investment. The authors hope the article will help the reader to (a) understand the binary principles and (b) analyze the ‘binary promise’ of greater growth based on a broader distribution of capital ownership.

*Conventional wisdom effectively treats capital (land, structures, machines, and the like) as though it were a kind of holy water that, sprinkled on or about labor, makes it more productive. Thus, if you have a thousand people working in a factory and you increase the design and power of the machinery so that one hundred men can now do what a thousand did before, conventional wisdom says, 'Voila! The productivity of the labor has gone up 900 percent!' I say 'hogwash.' All you've done is wipe out 90 percent of the jobs, and even the remaining ten percent are probably sitting around pushing buttons. What the economy needs is a way of legitimately getting capital ownership into the hands of the people who now don't have it."*  
(Louis O. Kelso, 1982, [www.kelsoinstitute.com](http://www.kelsoinstitute.com))

### I. Introduction

Binary economics asserts that capital has a potent distributive relationship to growth. If this proposition is true, then the democratization of capital acquisition (by reforming the economic system to extend to everyone the competitive opportunity to acquire capital with the earnings of capital) will enable all people, rich and poor, to become wealthier and an under-capacity producing economy to grow up to its potential level and perhaps beyond “full potential” as that term is generally understood.

As emerges from the writings primarily of Kelso et al (58, 61, 67, 86), Ashford (90, 96, 98, 02, 05), Gauche (1998), Ashford and Shakespeare (1999), Kane (2000), Kurland (2001), and others, binary economics provides a positive and normative answer to the following question: In the face of ever increasing automation, how should we deal with our under-capacity producing capitalistic economies?

The binary answer to the question is the democratization of capital acquisition. In most modern economies, most capital is acquired with the earnings of capital; whereas relatively little capital is acquired with the earnings of labor. Generally only high income earners (well-capitalized people) can afford to spend a portion of their earnings (savings) for the acquisition of financial assets and only they have the wealth to secure financing to acquire capital and pay for it with its future income. Middle income and low income individuals, are by and large excluded from substantial participation in the capital acquisition markets because their income and savings are inadequate or non-existent, and because they are unable to secure capital credit. From a binary perspective, institutions that support this process are both undemocratic and inefficient. They have the effect of suppressing both democratic participation and economic growth.

According to binary economics, a true democracy requires individual participation in both political power (universal suffrage) and economic power (universal participation in production by way of both labor and capital ownership). By this definition, it is undemocratic that only some individuals are able to acquire capital with the earnings of capital. Believing that the distribution of capital ownership has a potent distributive relationship to growth that is suppressed in under-producing capitalist economies (because institutional barriers prevent and discourage efficient, growth-enhancing ownership-broadening transactions), binary economists propose institutional reforms intended to open capital acquisition more competitively to all people.

The logic underlying the principle of binary growth can be understood and implemented by considering the three thousand largest companies in the USA, and then focusing on a subset comprised of prime-credit-worthy companies. Seemingly, most of these companies exhibit the frustrating essence of unutilized productive capacity. At diminishing unit costs, they can produce much more of the goods and services people dearly need and want; but there is lacking the consumer spending power to render more production profitable.

Presently through these corporations, almost all new capital is acquired with the earnings of capital, and much of it is acquired with borrowed money, Brealey et al. (06). At the same time, as reported by Wolff (1995, 1995) the ownership of this corporate wealth is highly concentrated so that approximately 1% of the people own 50% of the wealth and 10% own 90% of the wealth, leaving 90% people owning little or none. Thus, capital returns its value at a rate reflective of its long-term (suppressed) earning capacity as it buys itself for a small minority of the population.

To acquire capital with the earnings of capital, existing owners (primarily the rich) use (1) the pre-tax earnings of capital, (2) collateral, (3) credit, (4) market and insurance mechanisms to diversify and reduce risk, and (5) a monetary policy intended to protect property. Binary economics holds that the same institutions and practices that work profitably for well-capitalized people can also work profitably for all people. Moreover, in an economy operating at less than full capacity, because demand for capital goods is a derivative of demand for consumer goods in a future period, Moulton (35, 75), if capital can competitively pay for its acquisition costs out of its future earnings primarily for existing owners, it can do so even more profitably if all people are included in the acquisition process.

Accordingly, to enable all people and major, prime-credit-worthy corporations to capitalize on the potent distributive relationship between voluntary ownership-broadening capital acquisition and growth, a binary economy requires modest reforms in the market infrastructure governing corporate finance so that all people (not merely a minority of the people) are vested with competitive capital acquisition rights to acquire capital with the earnings of capital. In the more democratic binary system of corporate finance, the major credit-worthy corporations of an under-producing capitalist economy would have a practical means of meeting their capital requirements while encapitalizing their employees, consumers, neighbors, and others.

Combining the salient principles of (1) the Homestead Acts (intended to broaden capital ownership), (2) the employee stock ownership plan (ESOP) technique of corporate finance, which uses tax exempt, limited liability trusts (as fiduciaries for employees) to acquire shares of employer stock with non-recourse credit, (3) a market for capital credit insurance (such as that profitably provided by the Federal Housing Administration), and (4) a return of the Federal Reserve to its original Congressional mandate under Section 13 of the Federal Reserve Act to allow for the discounting of eligible productive private credit, binary economic strategies offer an entirely voluntary means that enables major prime-credit-worthy companies to meet any portion of its capital requirements while

simultaneously enabling their employees, customers, neighbors and others to acquire (with non-recourse credit) full-dividend shares of the participating companies which would pay their full return (net of reserves for depreciation, research, and development) first to retire the acquisition loans and then to provide a capital source of income to supplement wages and welfare benefits. With the prospect of central bank discounting, the cost of capital to the corporation for prime credit-worthy capital investment has been estimated at less than six percent.

Once the enabling legislation is passed, ownership-broadening “binary financing” would be entirely optional. Major corporations would have a new way to finance their capital requirements while encapitalizing their workers, their customers, and other; lenders and credit insurers would have a new source of business; fiduciaries would have enhanced ways of enriching their beneficiaries; advocates for the economically disadvantaged and government officials would have new ways of serving their constituencies. The overall effect of these proposals is not to socialize or redistribute private property, but rather to democratize the credit needed to acquire private property. [See Ashford (98).] However, in this paper, we set forth minimalist models of aspects of a binary economy intended to capture the essence of the binary approach in ways conducive to analysis within an orthodox micro- and macro-economic framework.

To democratize the process of capital acquisition consider a lending system that would, under specified conditions, allow banks to make special N-period “binary” loans (like mortgages) to individuals to enable them buy assets represented by full-dividend-paying shares of corporate stock. The loans would non-recourse as to the individual borrowers, but would be secured by a claim on the projected earnings of the assets acquired. The loans would be further collateralized by those assets and by such other collateral or loan insurance as may be negotiated. The shares would distribute all earnings (which of course exclude from revenues depreciation, research and development expenses) first to repay the loans and then to provide a capital income to their binary owners to supplement labor income and welfare benefits. After N periods, the assets will become loan-free property of the borrower. Thus, such capital democratization will enable individuals to earn income in a binary way (i.e., from two sources: labor and capital.)

To promote this ownership-broadening process, the government might take additional steps:

1. (to make available sufficient cash flow to finance the transaction) provide for a deduction from corporate income taxes for dividends on binary shares used to repay the acquisition loans or to provide capital income to the binary stockholders;
2. (to encourage the growth of a private system of capital credit insurance) establish a Capital Credit Reinsurance Corporation, modeled after the profitable operation of the Federal Housing Administration (FHA); and
3. (to reduce the cost of binary lending by eliminating the use of existing financial savings) discount binary loans, under Section 13 of the Federal Reserve Act (rather than purchase government obligations through the Federal Reserve’s Open Market Committee).

With or without these government actions, however, binary economists predict that the effect of voluntary capital acquisition transactions in such a system would be higher income, and higher rates of savings, capital formation, and growth and higher consumption levels for all. Moreover, in an under-capacity producing economy, the higher consumption levels will be non-inflationary.

### I.1. Non-Binary Economy and Automation

According to binary economists, by a process called technological advance, epitomized in automation, production has become increasingly capital intensive. From the binary perspective, the basic rule of invention and business is to produce more with more productive capital and less labor. The work of capital (such as robot-assembly lines, computers, etc.) has been displacing and vastly supplementing the work of labor. Casual observation reveals that, over time, in most work places, work done by labor (labor productiveness) has been diminishing relative to work done by capital or automated machines (capital productiveness) while total output has increased. This process whereby more is produced by using more productive capital and relatively less labor (whereby capital productiveness both displaces and vastly supplements labor productiveness) cause incomes of capital owners to rise relative to incomes of non-owners.<sup>1</sup>

Consider Figure 1. Owners of profit-making firms (O) introduce into their business automation (+ $\Delta A$ ); A generates output (+ $\Delta Q$ ), inventories (+ $\Delta I$ ) and eliminates employment possibilities (- $\Delta E$ ); in turn, owners and retained employees (RE) experience an increase in their income (+ $\Delta Y_{O,RE}$ ) while the income of displaced employees (DE) declines (- $\Delta Y_{DE}$ ). If, hypothetically, the economy consists of 'n' identical business entities and 'm' identical employees, the final result may be one of the following three:

$$\begin{array}{rcl} & > \\ |n\Delta Y_{O,RE}| & = & |m\Delta Y_{DE}|. \\ & < \end{array} \quad (1)$$

### I.2. Binary Economy and Automation

Consider Figure 2. This figure is similar to Figure 1; additionally, it displays the 'Lending Institution' from which displaced employees and 'Other People' (retained employees, stakeholders and anyone else) may borrow money to purchase ownership shares (subject to the conditions described above) issued by any credit-worthy, corporation profit-making entity in the economy. Figure 2 also includes the (+ $\Delta Y_C$ ) that reflects the possibility of income earned by capital (Yc) acquired by displaced employees and other people. Operating on the assumption that an essential purpose of capital investment is to produce more with more productive capital and less labor, the binary promise is that, in an efficient economy, the ">" and the "=" signs in (1.1) are more likely than the "<" sign. Operating on the assumption that the distribution ownership has a potent distributive relationship to growth, the binary promise for any economy is:

$$|n\Delta Y_{O,RE,C}| \geq |m\Delta Y_{DE}|. \quad (1.1)$$

In the remaining sections, an effort is made to explain the fundamentals of binary economics and the promise of binary distribution, efficiency, and growth by utilizing conventional neo-classical models.

## II. Automation & Isoquants

Suppose the economy consists of identical firms. Conventionally, let the representative firm maximize output (Q) subject to a total cost (TC) constraint. Let  $Q=f(L,A)$  and  $TC=wL+aA$ , where  $f$ =production function,  $L$ =labor,  $A$ =units of automation,  $w$ =price for  $L=1$ ,  $a$ =price for  $A=(a_0, a_1, \dots)$ ;  $TC$ ,  $w$  and  $a$  are all given; the  $TC$  line is an isocost line. Let  $(Q_0, Q_1)$  be two isoquants and  $e$ =equilibrium.

Consider Figure 3. The Figure displays isocost lines and isoquants. The axes measure  $L$  (vertical) and  $A$  (horizontal.) The vertical intercept of the isocost is  $TC/w$ ; because  $w=1$ ,  $TC/w=TC$ . The horizontal

intercept of the cost constraint is  $TC/a$ . Upon maximization of the production function subject to  $TC_0 = L + a_0A$ , equilibrium is reached at  $e_0$  which generates  $A_0$  and  $L_0$ , the optimum levels for  $A$  and  $L$ . At these optimum levels, the firm's maximum output is  $Q_0$ .

Suppose now that the firm devotes a portion of its budget equal to  $(TC_0 - TC_1)$  on labor-displacing automation systems and at the same time pays a lower price ( $a_1$ ) for each 'automation unit' (machine) it uses. Upon maximization of the production function subject to  $TC_1 = L + a_1A$ , equilibrium is reached at  $e_1$  which generates a higher optimum level for  $A$  at  $A_1$  and a lower level for  $L$  at  $L_1$ . At these optimum levels, the firm's maximum output is  $Q_1$  which is higher than  $Q_0$ .

Thus, the decrease in the price of  $A$  ( $-\Delta a$ ) causes a positive change in  $A$  ( $+\Delta A$ ), a positive change in  $Q$  ( $+\Delta Q$ ) and a negative change in  $L$  ( $-\Delta L$ ). In turn, the  $+\Delta Q$  causes a positive change in income ( $Y$ ) for the firm's stock holders and retained employees ( $+\Delta Y_F$ ) [where  $Y_F = Y_O + Y_{RE}$ ] and the  $-\Delta L$  causes a negative change in income for the displaced laborers ( $-\Delta Y_{DL}$ ); where  $F$ =firm and  $DE$ =displaced laborers. Figure 4 summarizes these changes. Obviously, the  $|\Delta Y_F|$  may be equal to, less than or greater than  $|\Delta Y_{DE}|$ .

To illustrate the relationship that connects the distribution of ownership with increasing growth capacity of under-producing economies, imagine that the economy consists of one firm. In the first time period, the firm employs only one employee; he along with the owner produce  $3x$ , where  $x$  is a perishable good; the owner pays the employee  $1x$  and keeps for herself  $2x$ ; thus, the employee's income is  $x$  and the employer's income  $2x$ . In the next time period, the employer replaces the employee by a costless machine; the firm produces  $4x$ ; the employer keeps for herself  $3x$  - that's all she needs; what happens to the 4<sup>th</sup>  $x$ ? If the displaced worker savings are worth  $x$ , or if he can borrow against future income or collateral, he will buy the 4<sup>th</sup>  $x$  and the wealth of the firm's owner will increase. If the displaced worker has no savings and/or he cannot borrow (for lack of earning capacity and collateral) to buy the 4<sup>th</sup>  $x$ , the unit (and perhaps the employee) will perish. If, however the employee can also acquire an ownership share of the costless machine (say 25%), the 4<sup>th</sup> unit of  $x$  will not perish, but will be enjoyed by the employee, without taking anything from the employer.

Of course, in the real world, machines are not costless; but in a sense they are frequently costless to the acquirer when they are acquired on credit and paid for with their future earnings. Competitive access to capital credit is usually a key to capturing the ownership benefits of technology generally and automation in particular. In analyzing the importance of access to credit, binary economics distinguishes between consumer credit and capital credit. Consumer credit, in theory, is generally used to help consumers minimize transaction costs associated with purchasing. In practice, however, consumer credit is frequently marketed to entice people to consume what their earnings cannot afford. Capital credit enables people to acquire capital (with the earnings of capital) so that they can afford (with their capital income) to purchase more consumer goods and producer goods. However, in addition to sufficient, risk-adjusted, expected earnings to repay the acquisition debt, capital credit generally requires at least one additional source of repayment (in the form of collateral or insurance) in the event the income projections fail to materialize. In a non-binary economy, capital credit is generally available only to well-capitalized and well-connected people, so that the capital acquired cannot be employed to its full potential. With modest reforms of the market system, binary economists maintain that the same processes can enrich all people by distributing the demand necessary to employ the incremental productive capacity of capital.

In general, as shown in Figure 5, the  $+\Delta A$  will cause a change in the economy's total income ( $Y$ ) that may range from  $N_1$  to  $N_2$  (in a non-binary economy) or from  $B_1$  to  $B_2$  (in a binary economy.) In other words, the binary promise is that the  $+\Delta A$  would cause  $Y$  to range within higher minimum and maximum levels.

### III. Automation, Marginal Labor Reduction & Marginal Labor Costs

Next consider Figure 6. The vertical axis measures (1) Marginal Labor Reduction (MLR) or Marginal Labor Income Reduction Cost and (2) Marginal Labor Cost (MLC). The horizontal axis measures

automation (A). The MLR curve is increasing and it is defined as the labor income reduction to employee per additional unit of automation; the MLC curve is diminishing and it is defined as the labor cost to employer per additional unit of automation. (NB=non-binary, B=binary.)

First, consider the MLC curve.  $A^*$  corresponds to maximum automation. At  $A_0$  total labor cost to the employer is equal to the area ( $A^*e_0A_0$ ) whereas at  $A_1$  total labor cost is the area ( $A^*ZA_1$ ) which is less than ( $A^*e_0A_0$ ) by an amount equal to the area ( $A_0e_0ZA_1$ ).

Second, consider the  $MLR_{NB}$  curve.  $A_{T1}$  corresponds to the level of automation that does not affect marginal labor reduction. At  $A_0$  total labor reduction is equal to the area ( $A_{T1}e_0A_0$ ) whereas at  $A_1$  total labor reduction is the area ( $A_{T1}KA_1$ ) which is greater than ( $A_{T1}e_0A_0$ ). Thus, in a non-binary economy, at  $A_0$  total costs are ( $A_{T1}e_0A^*$ ) whereas at  $A_1$  total costs are ( $A_{T1}KZA^*$ ).

If a binary economy generates additional income for employees and others, the additional income will act as a shifter of the MLR curve to the right from  $MLR_{NB}$  to  $MLR_B$  and thus reduce total costs from ( $A_{T1}KZA^*$ ) to ( $A_{T2}ZA^*$ ). Notice that the shift of the marginal labor reduction curve to the right or, the move from point K (Binary  $e_2$ ) to point Z (Binary  $e_1$ ) is Pareto superior: the employee is better off and the employer is as well off as she was prior to the shifting of the marginal labor reduction curve.

#### IV. Leisure-Income Choices

One could use the popular leisure-income choice model to highlight a few of the microeconomic principles associated with binary economics.

Conventionally, the employee maximizes utility  $U=U(L,G)$  subject to  $Y=wL+pG$ ; where,  $U$ =Utility,  $L$ =leisure in hours (a normal good),  $G$ =other goods,  $Y$ =income,  $w$ =hourly wage rate and opportunity cost of leisure,  $p$ =price of other goods,  $T$ =available time in hours. Let  $Y=wT$  and  $p=1$ . Consider Figure 7. If  $T=24$  and the employee wants to work no more than 8 hours – without opportunity to shirk, she will reach her highest indifference curve ( $U_e$ ) at  $e$ .

Consider now Figure 8. If the employee receives a fixed daily salary of  $\$F$  and she has the opportunity to shirk, she will maximize  $U$  at  $e_0$  on indifference curve  $U_0$  and thus devote all eight hours to leisure and zero hours to work.

**The ESOP Effect.** ESOPs (Employee Stock Ownership Plans) - one of many binary techniques of corporate finance – are a means whereby employees can acquire an ownership share in the profitability of their employer over and above a fixed salary. Consider Figure 9. In this figure, because of the incentive of ownership, the employee's constraint has changed from ( $\$F e_0 8H$ ) to ( $B e_1 e_0 8H$ ). As in Figure 8, the employee receives a fixed salary of  $\$F$  and an owner's percentage of profit which gives her the incentive to spend less time shirking than in Figure 8 (for example, 3 hours.) Thus, the employee reaches  $e_1$  on indifference curve  $U_1$  which provides more utility than the more opportunistic one. Thus, this binary tool has the potential to improve the well-being of the employee and the employer. Specifically it may encourage employee productivity, reduce opportunism, and foster a friendlier environment for more innovation and, ultimately, profit.<sup>2</sup>

**The General Binary Effect.** In a binary economy, the process by which capital acquires itself for existing owners is opened to all people. Corporations with credit-worthy capital requirements and with a policy of broadening ownership could rely on ESOP-like trusts to meet a portion of their capital requirements while "encapitalizing" their employees and others. After repayment of the loans used to acquire the shares, the new owners will earn spendable capital income to supplement their income from employment and/or their welfare benefits. With a capital cost recovery period of five years, a capital investment horizon of three years, and an anticipatory wealth-effect spending by the new binary owners, an under-producing economy might show distribution-based binary growth within the first few years of its operation.<sup>3</sup>

Suppose all income earners in a binary economy are represented by Figure 10. Originally, let the representative employee be at equilibrium at  $e$  on indifference curve  $U_e$  which is tangent on the dotted budget line; at  $e$ , the employee's income comes only from employment. Assume now that the employee's income is enhanced by  $Y_s$  (income from stocks); the new budget line is  $Te_vK$ . Subject to this kinked budget line, the employee may reach  $e_v$  on indifference curve  $U_v$ , retire, and live a 'Victorian' life style for the rest of her life; if the employee is a 'workaholic', she will reach  $e_w$  on  $U_w$ ; if she is 'normal', she will reach  $e_n$  on  $U_n$ , laboring somewhat less but earning more from the sum of her labor *and* her capital.

## V. Growing to capacity

At the macroeconomic level, one may envision the aggregate economy in both a binary and a non-binary environment. Consider Figure 11, which depicts a simple growth model similar to the one developed by Solow (1957). Let  $xY=F(xK, xL)$ , where  $Y$ =national output,  $K$ =capital,  $L$ =labor and  $x=1/L$ . Therefore,  $Y/L=y$ ,  $K/L=k$  and  $L/L=1$ . Thus, output per worker is a function of capital per worker or

$$y=f(k). \quad (2)$$

Additionally, let  $y$  be divided between consumption per worker ( $c$ ) and investment per worker ( $i$ ). Thus,  $y=c+i$ . Let  $c$  be the difference between  $y$  and  $sy$  (where  $s$ =saving rate) or  $c=y-sy$ . These last two equations imply that investment per worker is

$$i=sy. \quad (3)$$

To complete the simple model add depreciation ( $D$ );

$$D=(e/\alpha)k \quad (4)$$

where  $e$ =rate of depreciation and  $\alpha$ =rate of automation. Equation (4) modifies the Solow model by allowing the rate of automation to discount the rate of depreciation thus causing a rotation of the  $D$  line clockwise. Intuitively, automation contributes to gains: it produces more with the same or less amount of resources; additionally, for these gains, the automation investor is rewarded with tax deductions<sup>4</sup>. Hence,  $\alpha$  is a positive function of the rate of gains and tax deductions and, as such, it counters the losses attributed to depreciation. Figure 11 displays functions (2) to (4).  $D$  is displayed with constant  $e$  ( $\bar{e}$ ) and two different levels of  $\alpha$ :  $\alpha_0$  and  $\alpha_1$ . The economy is initially at  $k_0$  producing  $y_0$  with automation  $\alpha_0$  and  $D=(\bar{e}/\alpha_0)k$ . Suppose now that automation improves to  $\alpha_1$ ; the increase in  $\alpha$  causes  $D$  to rotate around the origin to the right.

In a binary environment (B), with a broadening distribution of capital ownership and income, an under-producing economy would have greater incentives to employ its potential  $k$  at  $k_B$ , move to greater possible  $y$  at  $y_B$ , achieve greater consumption  $c_B$  and greater saving and investment at  $s_B=i_B$ . In a non-binary environment (NB) the economy would employ less than potential  $k$  (e.g.  $k_{NB}$ ) which generates less than optimum  $y$  ( $y_{NB}$ ),  $c$ ,  $s$  and  $i$ .

## VI. Summary & Conclusion

We have endeavored to explain some major microeconomic and macroeconomic fundamentals of binary economics by utilizing conventional neo-classical economic models. Using these models, we examined the distribution-based binary growth claims by comparing the theoretical results reached in a non-binary economic environment to those that may be reached in a binary one. The most important results from the comparison are:

- Output/income would range within higher minimum and maximum levels in a binary environment than in a non-binary environment.
- A binary economy generates additional income which eases the income reduction imposed upon labor by automation (and perhaps other structural factors.)



- Binary instruments have the potential to improve the well-being of both the employee and the employer.
- If leisure is a normal good, a binary environment may enable individuals to enjoy a Victorian style of life or work less. On the other hand, if leisure is viewed as a non-normal good 'workaholic' employees may reach higher levels of income in a binary environment relative to a non-binary environment.
- A binary economy would employ more capital which, in turn, would generate more growth, maximum output/income, consumption, saving and investment.
- In general, binary economists recommend a system that will enable laborers (and other stakeholders) to become owners through the democratization of capital acquisition. As owners they will be able to supplement their labor earnings and/or welfare benefits with capital earnings. Binary principles promise increased, more broadly owned, productive capacity and therefore more income for all.

## Endnotes

1. There is some evidence that this change in the factor shares of income is occurring. Historical aggregate growth measurements - based on conventional neoclassical (Solow) growth models - support some assertions put forth by binary economics. For instance, according to binary economists, in a non-binary macroeconomy, like the USA economy today, continuous capital improvement would tend to increase the gap between capital productiveness (work done by capital) and labor productiveness (work done by labor) and, consequently, increase the gap between capital's share of income and labor's share of income. Using conventional growth accounting methodology, one may examine the contribution of inputs to national output growth as well as the income shares of these inputs through time. Consider Table 1. The table displays growth rates of real non-farm output and income shares for three time periods.

As rates in row 1 of Table 1 show, (a) most of the reported growth rate of output, across the time intervals considered, comes from capital and, (b) in the last two periods, the gap between capital contribution and labor contribution is wider. The widening of the gap between capital's and labor's respective contributions from 1991 to 1999 might be attributed to the impressive growth of information technology capital (ITC) during the same period. As reported by Oliner et al (2000, p.100, Table 1), the average rate contribution of ITC in each period was, 0.49 from 1974 to 1990, 0.57 from 1991 to 1995 and, impressively, 1.10 from 1996 to 1999.

Row 2 of Table 1, displays the income shares of labor and regular capital for the three time periods. According to Oliner et al (p. 4) "under neoclassical assumptions these income shares equal the output elasticity for each input and, assuming constant returns to scale, they sum to one." Through time, the income share of regular capital has been increasing whereas the income share of labor has been decreasing. Without a doubt, this is a historical fact that should be included in everyone's economic understanding.

In a binary economy, there would be no need to stop the trends shown in Table 1; on the contrary, such trends would prove more beneficial for all involved.

2. The ESOP effect, the positive effect that employee ownership may have on worker increased productivity, reduced opportunism, greater innovation and company profits has been previously advanced in literature based on economic considerations independent of binary economics. Rosen et al. (2005), Rosen et al. (2005), and Blasi et al. (2002.)

3. Profit-sharing and broader ownership compared: Because demand for capital goods is dependent on demand for consumer goods in a later period, when compared to pure profit sharing plans (which can be altered and terminated by the employer with relative ease at various times), broader ownership (because of its greater permanency) provides a more certain (bankable) basis for distribution-based capital investment. Broadening ownership establishes a claim on future profits and cannot be easily altered. Like "structured finance" that grew out of Kelso's thinking, it is financeable. On the macroeconomic level, capital democratization reduces systemic risk by creating the private property foundation for growing consumer demand and leisure, while it liberates savings for more entrepreneurial investment.

4. For example, if pharmacies make available to their clients a Robotic Prescription Dispensing System (in other words, if they invest in workflow automation), they may qualify for tax incentives and hence accumulate substantial savings. See <<http://www.pharmacy-automation.com/>>.

<sup>ß</sup> For useful comments, suggestions and corrections we are grateful to two anonymous reviewers of this journal; we remain solely responsible for all errors and omissions.

## References

- Ashford, R. (1990), "The Binary Economics of Louis Kelso: The Promise of Universal Capitalism," Rutgers Law Journal, Vol. 22, No. 1, Fall.
- Ashford, R., (1996), "Louis Kelso's Binary Economy," The Journal of Socio-Economics, Vol. 25, No. 1, 1996.
- Ashford, R. (1998), "A New Market Paradigm for Sustainable Growth: Financing Broader Capital Ownership with Louis Kelso's Binary Economics", Praxis, Vol. XIV.
- Ashford, R. & Rodney Shakespeare (1999), Binary Economics: The New Paradigm, University Press of America, Lanham, Maryland, USA.
- Ashford, R. (2002), "Binary Economics, Fiduciary Duties and Corporate Social Responsibility: Comprehending Corporate Wealth Maximization for Stockholders, Stakeholders, and Society," Tulane Law Review, Vol 76.
- Ashford, R. (2005), "Memo On Binary Economics to Attorneys for People of Color and Women Re: What Else Can Public Corporations Do For Your Clients?," St. John's Law Review, Vol. 79.
- Blasi, J., Kruse, D., and Bernstein, A., (2002) In the Company of Owners, especially chapter 7, pp. 153-182, Basic Books, 2002 .
- Brealey, R.A., Myers, S.C. and Allen, F.,(2006), Principles of Corporate Finance, McGraw Hill, New York.
- Gauche, Jerry N., (1998), "Binary Economic Modes for the Privatization of Public Assets," The Journal of Socio-Economics, Vol. 27, No. 3.
- Kane, S.V. (2000), "The Theory of Productiveness: A Microeconomic and Macroeconomic Analysis of Binary Growth and Output in the Kelso System," The Journal of Socio-Economics, Vol. 29, No. 6, 2000.
- Kelso, L.O.& M. Adler, (1958), The Capitalist Manifesto, Downloadable at <[www.kelsoinstitute.com](http://www.kelsoinstitute.com)> Kelso Institute.
- Kelso, L. & M. Adler (1961), The New Capitalists, Downloadable at <[www.kelsoinstitute.com](http://www.kelsoinstitute.com)> Kelso Institute.
- Kelso, L.O. & Patricia Hetter, (1967), Two-Factor Theory: The Economics of Reality, Random House, New York; paperback edition, Vintage Books:1968.
- Kelso, L.O. & Patricia Hetter Kelso, (1986), Democracy and Economic Power: Extending the ESOP Revolution Through Binary Economics, Ballinger Publishing Co., Cambridge, Massachusetts; reprinted by University Press of America, Lanham, Maryland: 1991.
- Kurland, N. (2001), "The Kelsonian Binary Model for Achieving Rapid Growth Without Inflation," The Journal of Socio-Economics, Volume 30, No. 6, pp: 495-515.
- Moulton, H.G. (1935, 1975), The Formation of Capital (originally published in 1935 as publication number 59 of the Institute of Economics of the Brookings Institution.)
- Oliner, S.D & Daniel E. Sichel, (2000), "The Resurgence of growth in the Late 1990s: Is Information Technology the story?," Journal of Economic Perspectives, Vol. 14, #4, Fall, pp: 3-22.

Rosen, C., Case, J. and Staibus, M, (2005), Equity: Why Employee Ownership Is Good for Business, Harvard Business School Press, Cambridge, 2005.

Rosen, C., Case, J. and Staibus, M, (2005), “Every Employee an Owner Really”, Harvard Business Review, June 2005.

Solow, Robert M., (1957), “Technical Change and the Aggregate Production Function,” Review of Economics & Statistics, Vol. 39, pp: 312-320

Wolff, E.N., (1995), Top Heavy: A Study of Increasing Inequality in America, Twentieth Century Fund, New York.

Wolff, E.N., (1995), “How the Pie is Sliced: America’s Growing Concentration of Wealth”, The American Prospect, #22, Summer, pp: 58-64.

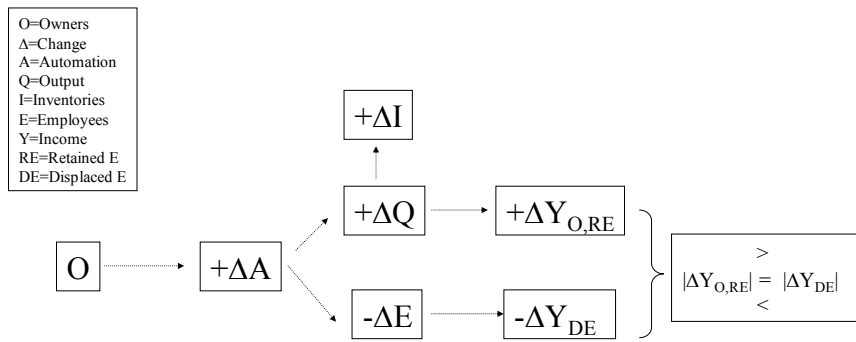


Figure 1

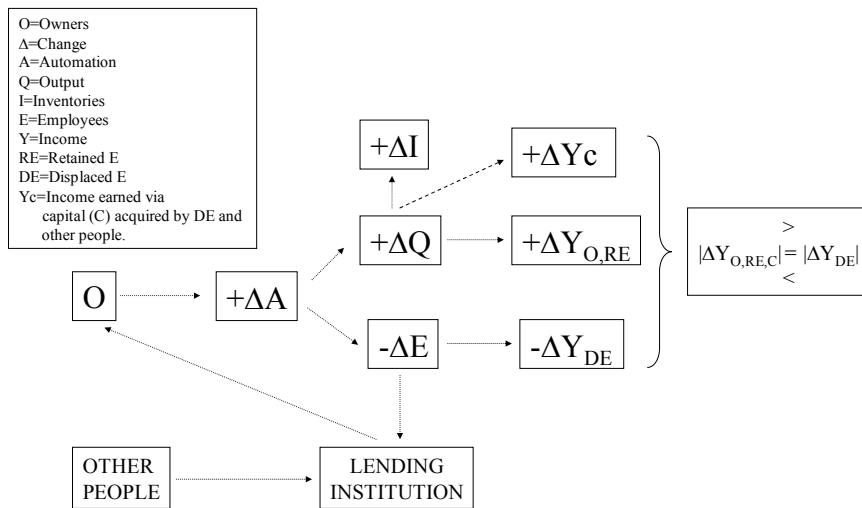


Figure 2

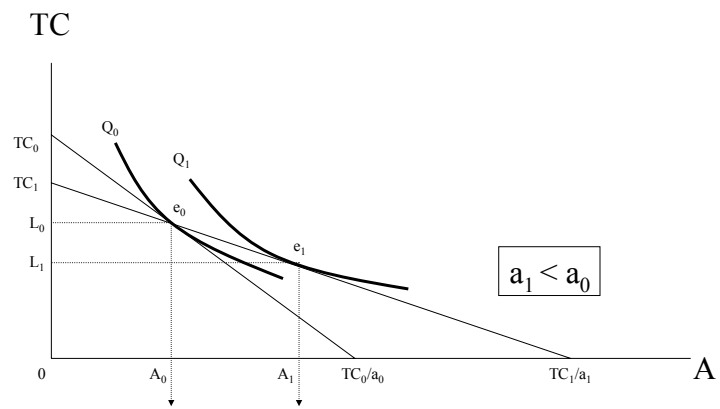


Figure 3

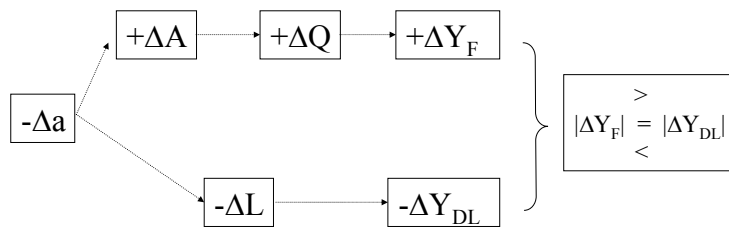


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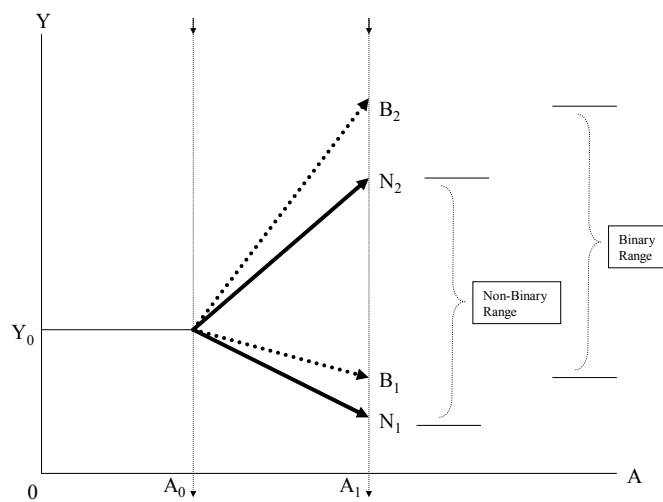


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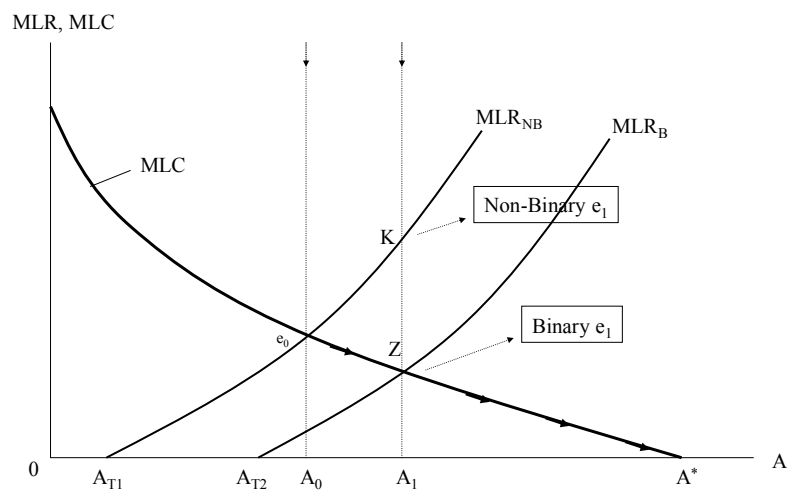


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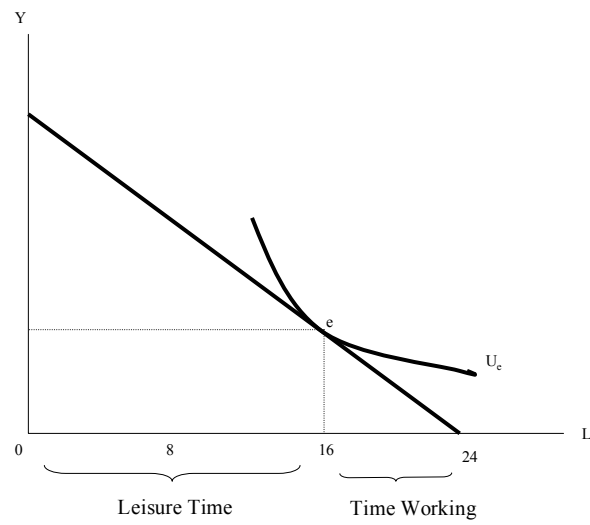


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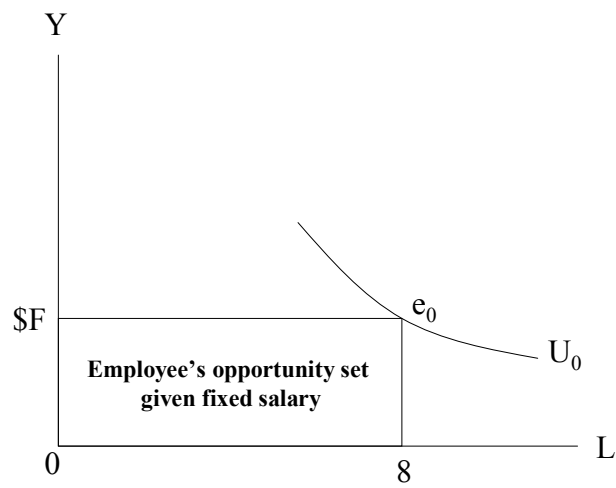


Figure 8



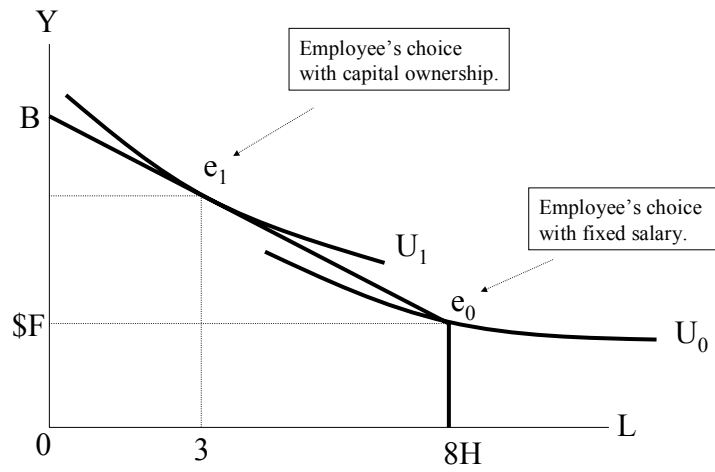


Figure 9

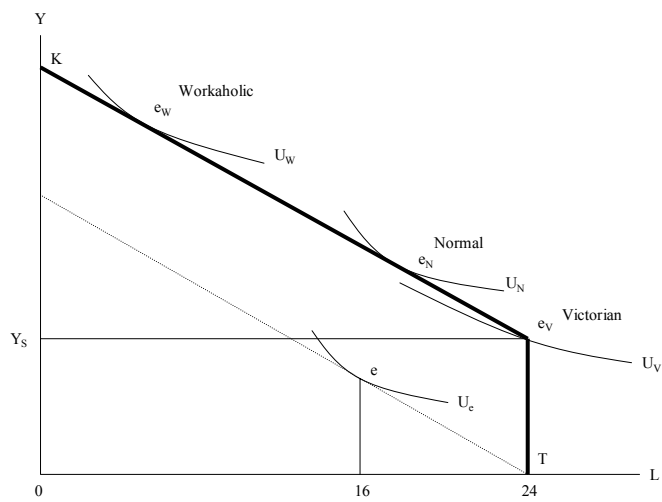


Figure 10

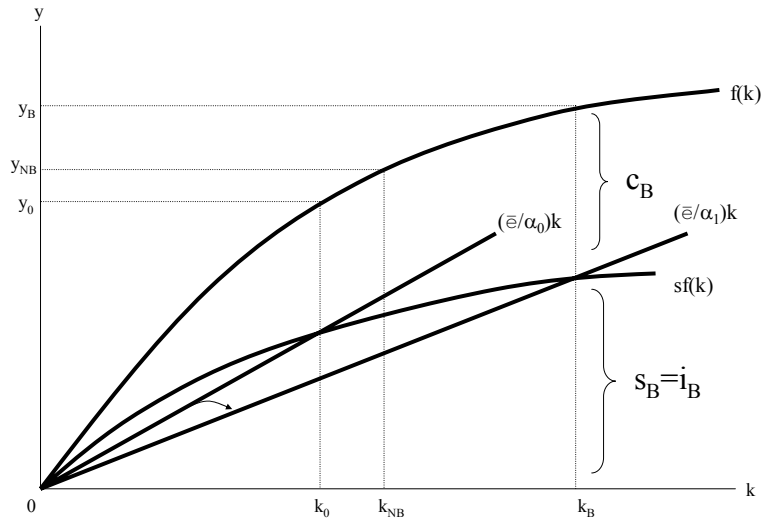


Figure 11

Table 1: Growth Rate of Real Non-Farm Output and Income Shares<sup>i</sup>

Row		1974-90	1991-95	1996-99
1	<b>Growth Rate of Output<sup>a</sup></b>	3.06	2.75	4.82
	Contributions from:			
	Capital <sup>b</sup>	1.68	1.49	3.01
	Labor <sup>c</sup>	1.38	1.26	1.81
2	<b>Income Shares</b>			
	Regular capital	31.10 %	32.10 %	33.10 %
	Labor hours	68.90 %	67.90 %	66.90 %

<sup>i</sup> Based on Oliner et al (2000, Table 1, p. 10.)

<sup>a</sup> Average annual log difference for years shown multiplied by 100.

<sup>b</sup> Capital = regular capital + multifactor productivity; multifactor productivity = the portion of output growth not attributed to labor and capital. According to Oliner et al (2000, p.5), "it is a catch-all for technological or organizational improvements that increase output for a given amount of input."

<sup>c</sup> Labor = labor hours + labor quality; labor quality, as explained in Oliner et al (2000, p.4), "reflects changes in the experience, gender, and educational mix of the workforce over time."